

The role of hydrogen sulfide in dentistry

Dear Editor,

Till this date, hydrogen sulfide has shown applications in dentistry related to halitosis. This letter addresses recent updates about hydrogen sulfide in dentistry other than halitosis with emphasis on studies done in dental specialties, periodontology and orthodontics.

The hydrogen sulfide produced by *Porphyromonas gingivalis* enhances methyl mercaptan-induced pathogenicity in mouse abscess formation and plays a supportive role in inflammation caused by methionine γ -lyase.¹ Exogenous hydrogen sulfide inhibits oral mucosal wound-induced macrophage activation *via* the nuclear factor- κ B pathway that may aid in controlling inflammation associated with mucosal wounds.² Hydrogen sulfide induces the formation of nucleotide-binding domain and leucine-rich repeat containing protein 3 inflammasome-dependent interleukin 1 β and interleukin 18 secretion in human mononuclear leukocytes *in vitro* in the pathogenesis of periodontitis.³ Endogenous hydrogen sulfide is produced in human gingival tissue with expression of cystathionine β -synthase and cystathionine γ -lyase.⁴ Hydrogen sulfide promotes immunomodulation of gingiva-derived mesenchymal stem cells *via* the Fas/FasL coupling pathway.⁵

Hydrogen sulfide regulates bone remodeling and promotes orthodontic tooth movement by enhancing alveolar bone remodeling as a result of an increased osteoclastic activity and osteogenesis.⁶ Hydrogen sulfide may also be involved in the periodontal tissue remodeling during the orthodontic tooth movement as a result of accelerated periodontal ligament cell differentiation, tissue mineralization, bone formation and collagen synthesis.⁶ It can be inferred that more collaborative and extensive research in ultrastructural level should be done to uncover the therapeutic options of hydrogen sulfide in dentistry in future.

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